

AMENDMENT TO THE CLAIMS

Claims 1-19 (Cancelled)

20.(New) A component mounting apparatus comprising:

a supplying unit configured to supply a component;

a head configured to have at least two nozzle rows aligned in a Y direction orthogonal to an X direction, each of which comprises at least one nozzle arranged in the X direction and configured to take out the component supplied from the supplying unit and to convey the component;

a circuit board holding unit configured to hold a circuit board on which the component conveyed by the head is mounted; and

an inspection unit, which is disposed on a moving path of the head from the supplying unit to the circuit board holding unit, configured to inspect a hold posture of the component held by the nozzle,

the inspection unit comprising: one sensor for posture inspection arranged independently for respective nozzle rows of the nozzles arranged on the head; and one lighting unit arranged for each of the nozzle rows and configured to irradiate light beam to the head at a time of posture inspection, each of the lighting units having an entrance port of optical information for taking an image of the component held by the nozzle.

21.(New) The component mounting apparatus as claimed in claim 20, wherein centers of fields of view of the respective sensors of the inspection unit are aligned in the X direction without displacement.

22.(New) The component mounting apparatus as claimed in claim 20, wherein centers of fields of view of the respective sensors of the inspection unit are arranged to be shifted in the X direction.

23.(New) The component mounting apparatus as claimed in claim 22, wherein in a case that the nozzles provided on the head are arranged in three rows or more in the Y direction, centers of fields of view of the respective sensors of the inspection unit are arranged to be shifted in zigzag in the X direction.

24.(New) A component mounting apparatus comprising:

- a supplying unit configured to supply a component;

- a head configured to have at least two nozzle rows aligned in a Y direction orthogonal to an X direction, each of which comprises at least one nozzle arranged in the X direction and configured to take out the component supplied from the supplying unit and to convey the component;

- a circuit board holding unit configured to hold a circuit board on which the component conveyed by the head is mounted; and

- an inspection unit, which is disposed on a moving path of the head from the supplying unit to the circuit board holding unit, configured to inspect a hold posture of the component held by the nozzle,

- the inspection unit comprising: one sensor for posture inspection arranged independently for respective nozzle rows of the nozzles arranged on the head; and one lighting unit shared between the sensors, arranged for all nozzle rows and configured to irradiate light beam to the head at a time of posture inspection, the lighting unit having an entrance port of optical information for taking an image of the component held by the nozzle.

25.(New) The component mounting apparatus as claimed in claim 24, wherein centers of fields of view of the respective sensors are arranged to be shifted in the X direction.

26.(New) The component mounting apparatus as claimed in claim 20, wherein the inspection unit is configured to have a reflectance including a mirror between the entrance port and the sensors, and the sensors are arranged on a side face of the inspection unit.

27.(New) The component mounting apparatus as claimed in claim 20, wherein the inspection unit is configured to have a reflecting/transmitting member comprising a half mirror or a prism between the entrance port and the sensors, and the sensors of the inspection unit are disposed alternately on a reflected light side and a transmitted light side of the reflecting/transmitting member with respect to optical information, of the component sucked by the nozzle, come through the entrance port.

28.(New) The component mounting apparatus as claimed in claim 27, wherein lenses are provided between the reflecting/transmitting member and the sensors of the inspection unit.

29.(New) The component mounting apparatus as claimed in claim 20, wherein a reflecting/transmitting member including a half mirror or a prism is provided between the entrance port and the sensors, and another sensor is additionally disposed at any position corresponding to a transmitted light side of the reflecting/transmitting member where an image is capable to be taken.

30.(New) The component mounting apparatus as claimed in claim 20, wherein the sensors of the inspection unit include sensors of different ranges of vision.

31.(New) The component mounting apparatus as claimed in claim 20, wherein the sensors of the inspection unit include sensors of different resolutions.

32.(New) A component mounting apparatus in which electronic components are held from an electronic component supplying device and mounted on a circuit board, comprising:

a component holding head configured to arrange component holding members for holding the electronic components in a plurality of lines and in a plurality of rows and move in X and Y directions orthogonal to each other; and

a component height detecting device configured to detect heights of the electronic components held by the component holding members in order to detect quality of hold postures of the electronic components held by the component holding members, the component height detecting device having a pair of light emitting unit and light receiving unit configured to emit and receive light for detection at a detectable angle (θ) with respect to an orthogonal direction orthogonal to a moving direction of the component holding members moved by the component holding head, the detectable angle being an angle for detecting individually each of the electronic components held by each of the component holding members.

33.(New) The component mounting apparatus as claimed in claim 32, wherein assuming that an arranging interval between the component holding members in the moving direction is P1 and an arranging interval between the component holding members in the orthogonal direction is P2, the detectable angle is an angle obtained from $\tan^{-1}((P1/2)/P2)$.

34.(New) The component mounting apparatus as claimed in claim 32, further comprising a control device configured to determine the quality of the electronic component based on component height information in a detecting section including a center of the component holding member in the moving direction among pieces of component height information sent from the component height detecting device.

35.(New) A component mounting method for holding electronic components and mounting them on a circuit board, comprising:

after holding the electronic components with component holding members arranged in a plurality of lines and a plurality of rows, and before mounting the electronic components on the circuit board, projecting light for detection at a detectable angle (θ) for detecting individually each of the electronic components held by the component holding members with respect to an orthogonal direction orthogonal to a moving direction of the

component holding members and receiving the light for detection, and inspecting quality of hold postures of the electronic components held by the component holding members.

36.(New) The component mounting method as claimed in claim 35, wherein assuming that an arranging interval between the component holding members in the moving direction is P1 and an arranging interval between the component holding members in the orthogonal direction is P2, the detectable angle is an angle obtained from $\tan^{-1}((P1/2)/P2)$.

37.(New) The component mounting method as claimed in claim 35, wherein determination of the quality of the hold postures of the electronic components is performed based on component height information in a detecting section including a center of each of the component holding members in the moving direction.